

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in telephone interviews with Brian E. Hennessey (Reg. No. 51,271) on 12 June 2008 and Hassan Shakir (Reg. No. 53,922) on 17 June 2008.

The application has been amended as follows:

Specification:

Page 13, line 9, insert: contained on a computer-readable recording medium after "program", i.e. "In terms of software, it can be achieved by a program contained on a computer-readable recording medium or the like having image processing facilities".

Claims:

7. (currently amended) An image processing method comprising: performing continuous shooting by using a camera rotatably supported by a predetermined member at timings of different angles of rotation while said member is rotated, with a

Art Unit: 2622

direction generally perpendicular to a plane of rotation as a shooting direction, an axis of rotation of the camera being displaced from a line of the shooting direction;

accepting a plurality of images obtained by said continuous shooting;

extracting images of objects to be parallel with each other from said plurality of images, respectively;

detecting the angles of rotation from tilts of said plurality of images, respectively, with reference to the images of said objects; and

relatively rotating said plurality of images based on the angles of rotation to obtain images parallel with each other;

wherein said predetermined member is a generally annular rotor with its circular surface as the plane of rotation;

said camera is supported in a position near an outer periphery of said rotor, and when said rotor is rotated, makes a circular movement with a distance from the center of rotation as a radius; and

in the performing continuous shooting, said plurality of images are shot from a plurality of positions in an orbit of said circular movement.

8. (currently amended) An image processing method comprising:

performing continuous shooting by using a camera rotatably supported by a predetermined member at timings of different angles of rotation while said member is rotated, with a direction generally perpendicular to a plane of rotation as a shooting

Art Unit: 2622

direction, an axis of rotation of the camera being displaced from a line of the shooting direction;

detecting the angles of rotation at respective shooting timings during said continuous shooting;

accepting a plurality of images obtained by said continuous shooting;

acquiring data on the angles of rotation detected of said plurality of images, respectively;

and

relatively rotating said plurality of images based on the angles of rotation to obtain images parallel with each other;

wherein the axis of rotation being displaced from the direction of shooting of the camera;

wherein said predetermined member is a generally annular rotor with its circular surface as the plane of rotation;

said camera is supported in a position near an outer periphery of said rotor, and when said rotor is rotated, makes a circular movement with a distance from the center of rotation as a radius; and

in the performing continuous shooting, said plurality of images are shot from a plurality of positions in an orbit of said circular movement.

9-10. (canceled)

11. (currently amended) An image processing apparatus comprising:

an image input unit for accepting a plurality of images shot by using a camera rotatably supported by a predetermined member from positions of different angles of rotation, with a direction generally perpendicular to a plane of rotation of said member as a shooting direction, an axis of rotation of the camera being displaced from a line of the shooting direction;

an extracting unit for extracting images of objects to be parallel with each other from said plurality of images, respectively;

a tilt detecting unit for detecting the angles of rotation from tilts of said plurality of images, respectively, with reference to the images of said objects; and

a rotation processing unit for relatively rotating said plurality of images based on the angles of rotation to obtain images parallel with each other;

wherein said predetermined member is a generally annular rotor with its circular surface as the plane of rotation;

said camera is supported in a position near an outer periphery of said rotor, and when said rotor is rotated, makes a circular movement with a distance from the center of rotation as a radius; and

said image input unit accepts said plurality of images shot from a plurality of positions in an orbit of said circular movement.

12. (currently amended) An image processing apparatus comprising:

an image input unit for accepting a plurality of images shot by using a camera rotatably supported by a predetermined member from positions of different angles of rotation, with a direction generally perpendicular to a plane of rotation of said member as a shooting direction, an axis of rotation of the camera being displaced from a line of the shooting direction;

an angle input unit for acquiring data on the angles of rotation; and

a rotation processing unit for relatively rotating said plurality of images based on the angles of rotation to obtain images parallel with each other;

wherein said predetermined member is a generally annular rotor with its circular surface as the plane of rotation;

said camera is supported in a position near an outer periphery of said rotor, and when said rotor is rotated, makes a circular movement with a distance from the center of rotation as a radius; and

said image input unit accepts said plurality of images shot from a plurality of positions in an orbit of said circular movement.

13-14. (canceled)

21. (currently amended) A computer-readable recording medium containing a program for making a computer exercise functions of:

accepting a plurality of images shot by using a camera rotatably supported by a predetermined member from positions of different angles of rotation, with a direction

generally perpendicular to a plane of rotation of said member as a shooting direction, an axis of rotation of the camera being displaced from a line of the shooting direction;

extracting images of objects to be horizontal references from said plurality of images, respectively;

detecting the angles of rotation from tilts of said plurality of images, respectively, with reference to the images of said objects; and

relatively rotating said plurality of images based on the angles of rotation to obtain images parallel with each other;

wherein said predetermined member is a generally annular rotor with its circular surface as the plane of rotation;

said camera is supported in a position near an outer periphery of said rotor, and when said rotor is rotated, makes a circular movement with a distance from the center of rotation as a radius; and

in the performing continuous shooting, said plurality of images are shot from a plurality of positions in an orbit of said circular movement.

22. (currently amended) A computer-readable recording medium containing a program for making a computer exercise functions of:

accepting a plurality of images shot by using a camera rotatably supported by a predetermined member from positions of different angles of rotation, with a direction generally perpendicular to a plane of rotation of said member as a shooting direction, an axis of rotation of the camera being displaced from a line of the shooting direction;

acquiring data on the angles of rotation; and
relatively rotating said plurality of images based on the angles of rotation to
obtain images parallel with each other;
wherein said predetermined member is a generally annular rotor with its circular
surface as the plane of rotation;
said camera is supported in a position near an outer periphery of said rotor, and
when said rotor is rotated, makes a circular movement with a distance from the center
of rotation as a radius; and
in the performing continuous shooting, said plurality of images are shot from a
plurality of positions in an orbit of said circular movement.

Allowable Subject Matter

2. Claims 7, 8, 11, 12, 15-18, 21 and 22 are allowed.
3. The following is an examiner's statement of reasons for allowance: The examiner could not find prior art that, for the purpose of capturing stereoscopic images, rotates a camera in a direction perpendicular to the plane of rotation, wherein the camera is mounted on the outer periphery an annular rotor (wheel, refer to Figure 1). The most similar prior art found is US Pub. No. 2002/0140821 (filed by Segev et al., hereinafter "Segev") and US Pub. No. 2002/0033885 (filed by Schuler et al., hereinafter "Schuler"). Segev discloses a "rig" on which one or more cameras is/are mounted. However, Segev does not disclose the details of the mount, such as where the camera(s) is mounted, the shape of the rotor, etc. Schuler discloses generating a stereoscopic image by taking images in plural locations, the locations forming a rough circle (refer to

Figure 1). However, Schuler does not disclose a mount/rotor as required by applicant's independent claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICHARD M. BEMBEN whose telephone number is (571)272-7634. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tuan V Ho/
Primary Examiner, Art Unit 2622

RMB